



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/743,309

12/23/2003

Alexander A. Maltsev

P-5910-US

5554

49444 7590 07/03/2008  
PEARL COHEN ZEDEK LATZER, LLP  
1500 BROADWAY, 12TH FLOOR  
NEW YORK, NY 10036

EXAMINER

LIU, BEN H

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

07/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/743,309	<b>Applicant(s)</b> MALTSEV ET AL.	
	<b>Examiner</b> BEN H. LIU	<b>Art Unit</b> 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on April 9<sup>th</sup>, 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-21,23-29,31,32,34-40,42 and 44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-21,23-29,31,32,34-40,42 and 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This is in response to an amendment/response filed on April 9<sup>th</sup>, 2008.
2. Claims 1, 3-5, 12-16, 20-21, 23-25, 32, 34-36, and 44-45 have been amended.
3. Claims 2, 22, 33, and 43 have been canceled. Claims 10, 30, and 41 have been previously canceled.
4. Claims have been added.
5. Claims 1, 3-12, 13-21, 23-29, 31-32, 34-40, 42 and 44 are currently pending.

### ***Specification***

6. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Specifically, paragraph 33 of the specification recites a hyperlink. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2616

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1, 3-11, 13-19, 21, 23-29, 31, 32, 34-40, and 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Ward (U.S. Patent 6,754,170) in view of Thomas et al. (U.S. Patent 6,885,708).

**For independent claims 1, 13, 21, and 32**, Ward discloses a transceiver (*see column 7 lines 51-57*) comprising an antenna (*see column 5 lines 16-32*) and data packet generator to generate a data packet including a compatibility preamble field subdivided into a short combined pre-amble, a long combined preamble, and a combined signal field (*see figure 5 and column 8 lines 34-51, which recite a preamble including short symbols, long symbols, and medium*

Art Unit: 2616

*symbols*), and a physical layer convergence protocol header that includes bit and power loading information (*see column 8 lines 52-60 and figure 3A, which recite a PLCP header containing bit rate and length information*).

Ward discloses all the subject matter of the claimed invention with the exception that the packet generator generates a data packet including two or more training fields separate from said compatibility preamble field. Thomas et al. from the same or similar fields of endeavor disclose a modulation method and receiver in a wireless system (*see column 2 lines 55-63*) that uses packets with two or more training fields interspersed with data blocks (*see column 3 lines 43-62 and figure 2*). The training fields can be transmitted as OFDM short symbols (*see column 11 lines 13-15*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement two or more training fields separate from the preamble as taught by Thomas et al. with the data packet generator as taught by Ward. Since the training field can be transmitted as OFDM symbols, it can be inserted with the variable number of OFDM symbols as part of the data field separate from the preamble as taught by Ward (*see figure 3a*). The motivation for using the two or more training fields separate from the preamble field as by Thomas et al. with the data packet generator as taught by Ward is to increase the performance of the system by improving the estimating and tracking of transmission channels.

**For claims 3, 14, 23, and 34**, Ward discloses a data packet wherein the short combined preamble comprises two or more short preambles to be transmitted over two or neighboring sub-channels, and wherein at least one of the two or more short preambles is phase rotated relative to the other short preambles (*see column 2 lines 1- 8 and column 8 lines 34-51, which recite packets with short symbols transmitted in a spread spectrum technique*).

**For claims 4, 15, 24, and 35,** Ward discloses a data packet wherein the long combined preamble comprises two or more long preambles to be transmitted over two or more neighboring sub- channels, and wherein at least one of the two or more long preambles is phase rotated relative to the other long preambles (*see column 2 lines 1- 8 and column 8 lines 34-51, which recite packets with long symbols transmitted in a spread spectrum technique*).

**For claims 5, 16, 25, and 36,** Ward discloses a data packet wherein the combined signal preamble field comprises: two or more signal fields adopted to be transmitted over two or more neighboring sub- channels, and wherein at least one of the two or more signal fields is phase rotated relative to the other signal fields (*see column 2 lines 1- 8 and column 8 lines 34-51, which recite packets with medium symbols transmitted in a spread spectrum technique*).

**For claims 6, 26, and 37,** Ward discloses all the subject matter of the claimed invention with the exception wherein the two or more training fields comprises a prefix training field and a postfix training field, both fields having substantially the same format. Thomas et al. from the same or similar fields of endeavor disclose a modulation method and receiver in a wireless system (*see column 2 lines 55-63*) that uses packets with two or more training fields interspersed with data blocks (*see column 3 lines 43-62 and figure 2*). The training fields can be transmitted as OFDM short symbols (*see column 11 lines 13-15*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement two or more training fields separate from the preamble as taught by Thomas et al. with the data packet generator as taught by Ward. Since the training field can be transmitted as OFDM symbols, it can be inserted with the variable number of OFDM symbols as part of the data field separate from the preamble as taught by Ward (*see figure 3a*). The motivation for using the two or more training fields

separate from the preamble field as by Thomas et al. with the data packet generator as taught by Ward is to increase the performance of the system by improving the estimating and tracking of transmission channels.

**For claims 7, 17, 27 and 38,** Ward discloses all the subject matter of the claimed invention with the exception wherein the data packet comprises at least one data field fragmented into two or more fragments separated by at least one middle-fix training field. Thomas et al. from the same or similar fields of endeavor disclose a modulation method and receiver in a wireless system (*see column 2 lines 55-63*) that uses packets with two or more training fields interspersed with data blocks (*see column 3 lines 43-62 and figure 2*). The training fields can be transmitted as OFDM short symbols (*see column 11 lines 13-15*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement two or more training fields separate from the preamble as taught by Thomas et al. with the data packet generator as taught by Ward. Since the training field can be transmitted as OFDM symbols, it can be inserted with the variable number of OFDM symbols as part of the data field separate from the preamble as taught by Ward (*see figure 3a*). The motivation for using the two or more training fields separate from the preamble field as by Thomas et al. with the data packet generator as taught by Ward is to increase the performance of the system by improving the estimating and tracking of transmission channels.

**For claims 8, 28, and 39,** Ward discloses all the subject matter of the claimed invention with the exception wherein the two or more training fields further comprise a middle-fix training field having substantially the same format as the prefix training field and the postfix training field. Thomas et al. from the same or similar fields of endeavor disclose a modulation method

Art Unit: 2616

and receiver in a wireless system (*see column 2 lines 55-63*) that uses packets with two or more training fields interspersed with data blocks (*see column 3 lines 43-62 and figure 2*). The training fields can be transmitted as OFDM short symbols (*see column 11 lines 13-15*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement two or more training fields separate from the preamble as taught by Thomas et al. with the data packet generator as taught by Ward. Since the training field can be transmitted as OFDM symbols, it can be inserted with the variable number of OFDM symbols as part of the data field separate from the preamble as taught by Ward (*see figure 3a*). The motivation for using the two or more training fields separate from the preamble field as by Thomas et al. with the data packet generator as taught by Ward is to increase the performance of the system by improving the estimating and tracking of transmission channels.

**For claims 9, 18, 29 and 40**, Ward discloses all the subject matter of the claimed invention with the exception wherein the transceiver includes a modulator to modulate a first of the two or more fragments using a first modulation scheme and a second of the two or more fragments using a second modulation scheme. Thomas et al. from the same or similar fields of endeavor disclose a modulation method and receiver in a wireless system (*see column 2 lines 55-63*) that uses two or more training fields interspersed with data blocks to enable different modulation schemes (*see column 3 lines 43-62*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement two or more training fields to enable different modulation schemes as taught by Thomas et al. with the data packet generator as taught by Ward. The different modulation schemes can be implemented by using different training fields interspersed between data blocks to signify different modulations. The motivation



for using the two or more training fields to enable different modulation schemes as by Thomas et al. with the data packet generator as taught by Ward is to increase the performance of the system by enabling the flexible use of modulation to transmit different blocks of data based on need.

**For claims 11, 19, 31, and 42**, Ward discloses a transceiver comprising an encoder to encode a first fragment of the two or more fragments by a first code and a second fragment of the two or more fragments by a second code (*see column 9 lines 14-21, which recite encoding the data blocks using different encoding rates*).

11. Claims 12, 20, 44, and 45 rejected under 35 U.S.C. 103(a) as being unpatentable over Ward (U.S. Patent 6,754,170) in view of Thomas et al. (U.S. Patent 6,885,708) as applied to claims 1, 13, 21, and 32 respectively and further in view of Sandell (U.S. Patent Application Publication 2004/0131011).

**For claims 12, 20, 44 and 45**, Ward and Thomas et al. discloses all the subject matter of the claimed invention with the exception wherein at least one of the two or more training fields is to provide long term channel prediction. Sandell et al. fro the same or similar fields of endeavor disclose an OFDM signal that uses training sequences for channel estimation (*see paragraph 43*). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to perform channel estimation as taught by Sandell et al. using the training sequences interspersed between data blocks as taught by Ward and Thomas et al. The training sequence for channel estimation can be implemented by transmitting the training sequence as an OFDM signal along with the rest of the packet. The motivation for using the training sequence in the data

packet for channel estimation is to improve the performance of the system by compensating for changing transmission and reception conditions.

### ***Response to Arguments***

12. Applicant's arguments with respect to claims 1, 3-9, 11-21, 23-29, 31-32, 34-40, 42, and 44-45 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (*See form PTO-892*).

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BEN H. LIU whose telephone number is (571)270-3118. The examiner can normally be reached on 9:00AM to 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ricky Ngo/  
Supervisory Patent Examiner, Art Unit  
2616

BL